

AMENDMENT OF DRAWINGS

Pursuant to 37 C.F.R. §1.85, applicants submit herewith a Replacement Sheet 8/8 for this application. In the Replacement Sheet, Figures 13 and 14 are amended to include reference numerals to indicate features shown in the drawings as originally filed. No new matter is involved in the amendment of the drawings.

#### REMARKS

Applicants have amended the drawings to add reference numerals to indicate features shown in the drawings as originally filed. In Figs. 13 and 14, reference numeral "140" is added to designate the top surface 140 of the pivot bar 138. The reference numerals "142" and "144" are added to designate the brush base 142 and the top surface 144 of the brush base 142. No new matter is involved in the amendments of the drawings.

#### RESPONSE TO OBJECTION TO SPECIFICATION

In the Official Action, the Examiner objected to the specification as failing to provide proper antecedent basis for the claimed subject matter. Applicants have amended the specification to overcome the Examiner's objection.

The specification has been amended to provide antecedent basis for the limitation of Claim 1 that "the surfaces of the first and second bristle supports being capable of lying in substantially a same plane during operation of the electric toothbrush." The original specification discloses a brush base (now designated 142) which corresponds to the first bristle support and a pivot bar 138 which corresponds to the second bristle support of Claim 1. The original drawings (Figs. 13 and 14) show that the pivot bar 138 and the brush base 142 have top surfaces (now designated as 140 and 144) which are capable of lying in substantially the same plane. This occurs during the operation of the electric toothbrush when the pivot bar 138 is aligned with the brush base 142 by oscillation of the pivot bar 138 relative to the brush base 142.

Applicants believe that the above amendments provide the required antecedent basis for the limitation recited in Claim 1 and that no new matter is involved. Accordingly, applicants request that the Examiner withdraw the objection to the specification.

#### RESPONSE TO CLAIM REJECTION

In the Official Action, Claims 8-12 were rejected under 35 U.S.C. §102(b) as anticipated by Japanese publication 10-66704. Applicants disagree with the Examiner and believe that the Japanese publication does not anticipate Claims 8-12 as explained below.

Claim 8 of the present application recites a powered toothbrush as follows:

A powered toothbrush comprising

- (1) a handle with a neck,
- (2) a head mounted to said neck, said head having an exposed outer surface,
- (3) a first tuft block mounted to a fixed section of said head, said first tuft block having bristles extending outwardly from said exposed outer surface,
- (4) a first drive structure operatively connected to said first tuft block for moving said first tuft block in a plane generally parallel to said exposed outer surface,
- (5) a second tuft block mounted within said fixed section of said head, at least a portion of said second tuft block being aligned with an opening in said exposed outer surface,
- (6) said second tuft block having bristles extending outwardly from said exposed outer surface, and
- (7) said second tuft block being mounted for moving in a direction generally perpendicular to said exposed outer surface within said opening.

According to the Examiner, the first tuft block recited in limitation (3) of Claim 8 is satisfied by item 13 (described as a rotation pad) of the Japanese '704 publication. The Examiner asserts that the first tuft block (rotation pad 13) is rotatably mounted to a fixed section 11 (described as a bristle pad) of the head for oscillating rotating movement (shown by arrow in Fig. 16).

Further, according to the Examiner, the second tuft block recited in limitation (5) of Claim 8 is satisfied by item 12 (which is described as a movable block) of the Japanese '704 publication. The Examiner asserts that the second tuft block (movable block 12) is mounted within the fixed section (bristle pad 11) of the head and that the second tuft block (movable block 12) is aligned and received in an opening in the exposed outer surface (top surface of rotation pad 13). The Examiner further asserts that, as recited in limitation (6) of Claim 8, the second tuft block (movable block 12)

has bristles (2) extending outwardly from the exposed outer surface (top surface of rotation pad 13).

For the Examiner's consideration, applicants submit an Exhibit I which includes an enlargement of Figs. 16 and 17 of the Japanese '704 publication. Fig. 17 of Exhibit I includes reference numerals added by applicants to facilitate the consideration of the following remarks. Also submitted are Exhibit II which is a copy of Figs. 1-3B of the present application and Exhibit III which is a copy of Figs. 1-4 of Fattori U.S. Patent 6,889,401. Applicants also submit Exhibit IV which is a translation of the Japanese '704 publication for the Examiner's information.

Applicants believe that the Japanese '704 publication does not anticipate limitation (6) of Claim 8 which requires the second tuft block to have bristles extending outwardly from the exposed outer surface. In the Examiner's view, item 12 of the Japanese '704 publication satisfies the requirement of a second tuft block. Applicants note that the translation of the Japanese '704 publication refers to item 12 as a movable block and that Fig. 17 shows the movable block 12 coupled to a central brush portion located within a central opening in the rotation pad 13.

Referring to Exhibit I (Fig. 17), the movable block 12 has a stem 40 including an enlarged tip 42 extending into the central opening of the rotation pad 13. The bristles 2 of the central brush portion are embedded in a brush base 50. The brush base 50 has a reduced diameter section 52 which extends into the central opening of the rotation pad 13 and is coupled to the stem 40 of the movable block 12. The brush base 50 has an enlarged diameter section 54 extending outwardly above the outer surface of the rotation pad 13. The enlarged section 54 of the base 50 is too large to be retracted into the central opening in the rotation pad 13. As a result, the enlarged section 54 always extends outwardly above the outer surface of the rotation pad 13.

As shown in Fig. 17, the bristles 2 of the central brush portion are embedded in and project from the enlarged diameter section 54 of the base 50. The lowermost portions of the bristles

2 are located in the enlarged section 54 of the base 50 at a distance spaced substantially away from the exposed outer surface of the rotation pad 13. It is clear from Fig. 17 that the bristles 2 extend outwardly from the enlarged section 54 of the base 50 of the central brush portion, not from the exposed outer surface of the rotation pad 13. Fig. 17 shows that, with the base 50 retracted into the rotation pad 13, the lowermost portions of the bristles 2 in the enlarged section 54 are still located above the exposed outer surface of the rotation pad 13. Thus, limitation (6) of Claim 8 which defines the second tuft block as having bristles extending outwardly from the exposed outer surface is not satisfied by the Japanese '704 publication.

In the present application, Fig. 2 shows that the center tuft of bristles 18 is secured to a slider core 20 located in a central opening in the brush base 24 (Exhibit II). The lowermost portions of the bristles 18 are embedded in an axial opening in the slider core 20. As shown in Fig. 3A, when the slider core 20 is retracted into the brush base 24, the top surface of the slider core 20 is level with the exposed outer surface of the brush base 24. As a result, the lowermost portions of the bristles 18 are located below the exposed outer surface of the brush base 24. The bristles 18 and the slider core 20 satisfy the limitation (6) of Claim 8 which recites a second tuft block having bristles extending outwardly from the exposed outer surface.

Similarly, in Fattori U.S. Patent 6,889,401, Fig. 3 shows a toothbrush including a tuft block 24 with bristles 32 projecting therefrom (Exhibit III). The tuft block 24 is slidably received in a bore in the brush head 14. When the tuft block 24 is extended (Fig. 3), the top surface of the tuft block 24 is level with the exposed outer surface of the head 14. When the tuft block 24 is retracted (Fig. 4), the top surface of the tuft block 24 is below the exposed outer surface of the head 14. In both instances, the lowermost portions of the bristles 32 embedded in the tuft block 24 are located below the exposed outer surface of the head 14. The tuft block 24 and the bristles 32 satisfy the limitation (6) of

Claim 8 which recites a second tuft block having bristles extending outwardly from the exposed outer surface.

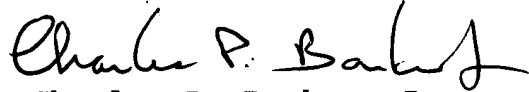
In comparison with the present application and Fattori 6,889,401, in the operation of the Japanese '704 toothbrush, the top surface of the enlarged section 54 of the brush base 50 never becomes aligned with the exposed outer surface of the rotation pad 13. This occurs because the enlarged section 54 of the brush base 50 cannot be retracted into the central opening in the rotation pad 13. As a result, the lowermost portions of the bristles on the enlarged section 54 of the brush base 50 are never located below the exposed outer surface. Thus, the Japanese '704 toothbrush does not satisfy limitation (6) of Claim 8 requiring bristles extending outwardly from the exposed outer surface.

In contrast to limitation (5) of Claim 8 relating to the second tuft block, applicants note that the item identified by the reference numeral 12 of the Japanese '704 publication does not constitute a "tuft block". Instead, the Japanese '704 publication refers to item 12 as a "movable block" and shows that the movable block 12 is coupled to a brush base 50 which supports the central bristles 2. Although the English translation (Exhibit IV) states that the central bristles 2 are embedded in the movable block 12 (paragraph 0017), the Japanese '704 publication instead shows that the central bristles 2 are embedded in the enlarged section 54 of the brush base 50 (Exhibit I, Fig. 17), not in the movable block 12. Thus, applicants submit that limitation (5) of Claim 8 which recites a second tuft block is not satisfied by the Japanese '704 publication because the movable block 12 is not provided with any tufts of bristles.

For the foregoing reasons, applicants believe that the Japanese '704 publication does not anticipate Claim 8 and dependent Claims 9-12 of the present application. Accordingly, applicants request the Examiner to withdraw the rejection of Claims 8-12 under 35 U.S.C. §102(b) and to institute an interference between the present application and U. S. Patent 6,889,401.

If the Examiner believes that any outstanding matters can be resolved by a telephone discussion, applicants suggest that the Examiner contact the undersigned attorney by telephone.

Respectfully submitted,

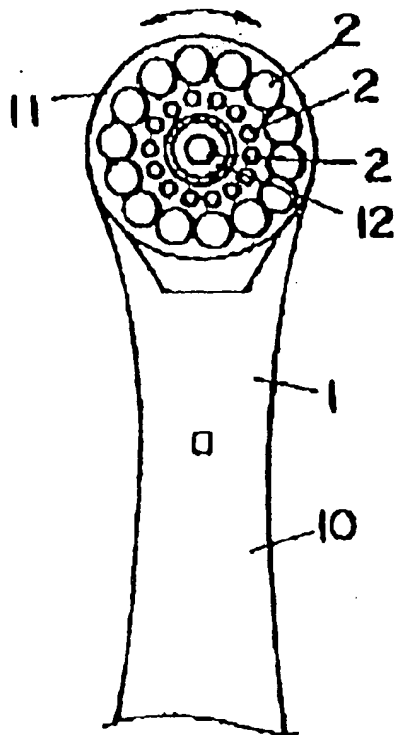
A handwritten signature in cursive script, reading "Charles P. Boukus, Jr.".

Charles P. Boukus, Jr.  
Registration No. 24,754  
Attorney for Applicants  
Suite 202  
2001 Jefferson Davis Highway  
Arlington, Virginia 22202  
(703) 415-2620

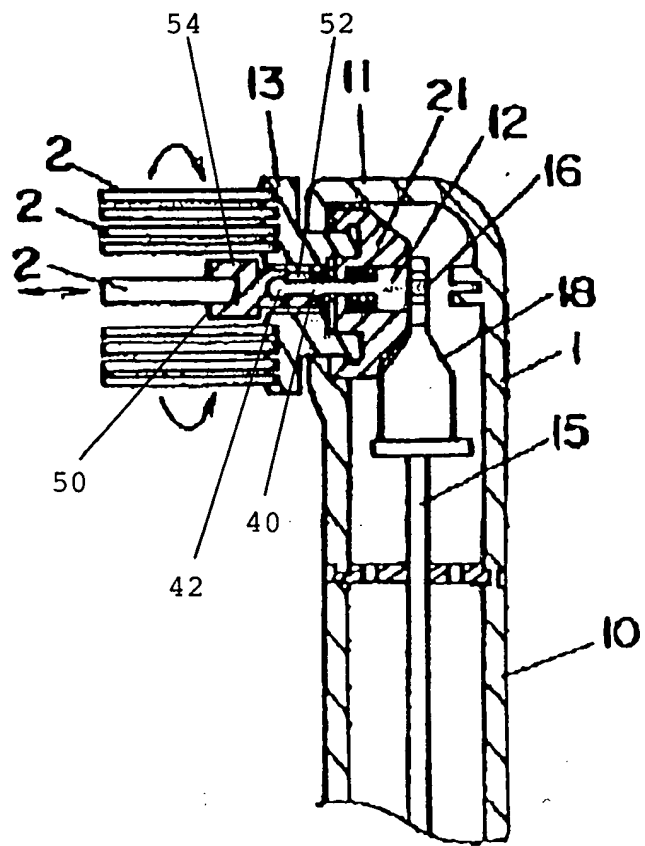
January 13, 2006

特開平10-66704

【図16】

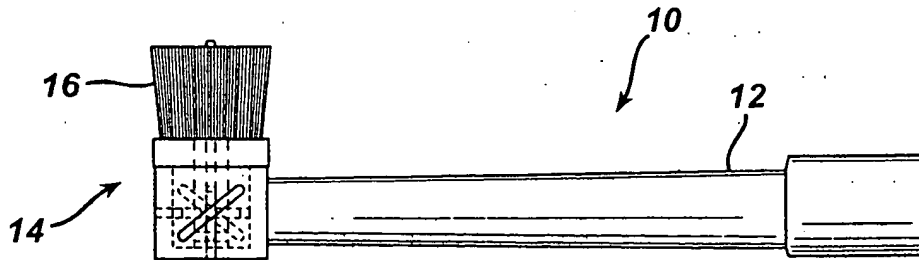


【図17】

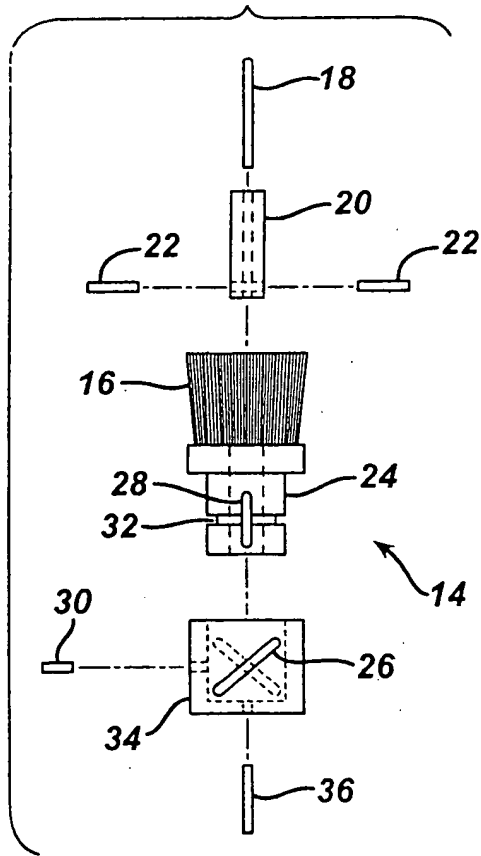




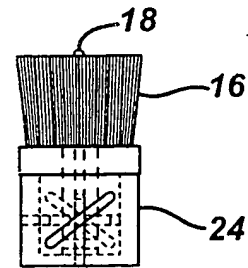
**FIG. 1**



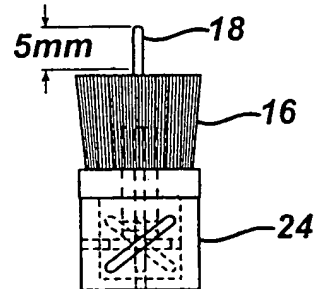
**FIG. 2**



**FIG. 3A**



**FIG. 3B**



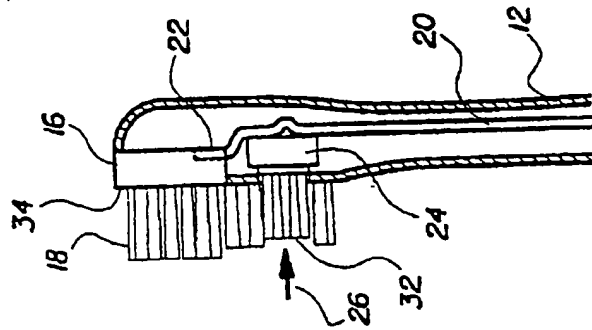


FIG. 4

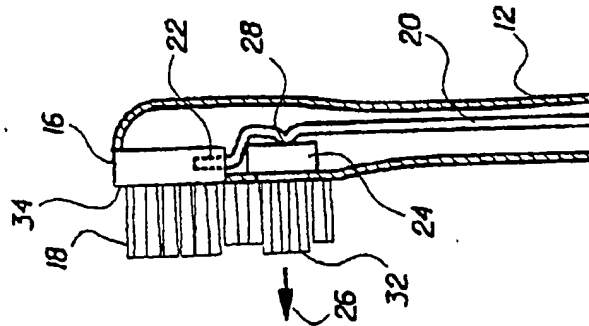


FIG. 3

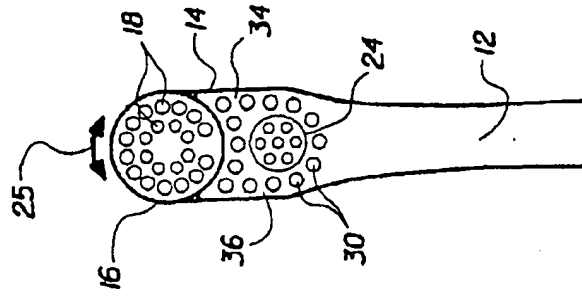


FIG. 2

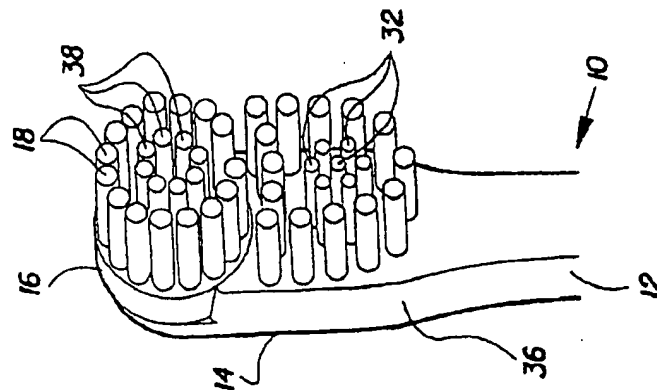


FIG. 1

(19) Japanese Patent  
Office (JP)

(12) Publication of Unexamined  
Patent Application (A)

(11) Disclosure number:  
**H10-66704 [1998]**

(43) Publication date: March 10, 1998

(51) Int.Cl. <sup>6</sup>	ID symbol	JPO file No.	FI	Technology designation
A 61 C 17/22			A 46 B 13/02	700

Request for examination not filed Number of claims: 5 OL (6 pages in all)

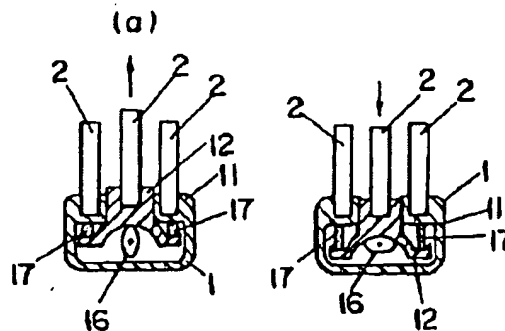
(21) Application number	H8-225675 [1996]	(71) Applicant	000005832 Matsushita Electric Works, Ltd. 1048 Kadoma, Oaza, Kadoma-shi, Osaka-fu
(22) Filing date	August 27, 1996	(72) Inventor	Haruhiko Naruse in Matsushita Electric Works, Ltd. 1048 Kadoma, Oaza, Kadoma-shi, Osaka-fu
		(72) Inventor	Yoshihiro Kitamura in Matsushita Electric Works, Ltd. 1048 Kadoma, Oaza, Kadoma-shi, Osaka-fu
		(72) Inventor	Minoru Kawamoto in Matsushita Electric Works, Ltd. 1048 Kadoma, Oaza, Kadoma-shi, Osaka-fu
		(74) Agent	Choshichi Ishida, Patent Attorney (and 2 others)

(54) [Title of invention] Electric toothbrush

(57) [Abstract]

[Problem] To make it possible to simply and surely remove tartar, plaque, tobacco stains, and other matter adhering to the surface of teeth.

[Solution means] It has many bristles 2 and a drive means that drives the bristles 2. Said drive means drives only some of the bristles 2 back and forth in their axial direction. The bristles can be kept securely against the surface of the teeth by other bristles that do not move back and forth in their axial direction, thus providing a sure operation to remove, by the bristles that move back and forth in the axial direction, the matter that adheres to the surface of the teeth.



1 holder  
2 bristles  
12 movable block  
15 drive shaft  
16 cam

**Exhibit IV**

## [Claims]

[Claim 1] In an electric toothbrush that has many bristles and a drive means that drives the bristles, an electric toothbrush that is characterized in that the drive means causes only some of the bristles to move back and forth in their axial direction.

[Claim 2] An electric toothbrush as described in claim 1 that is characterized in that the bristles that move back and forth in the axial direction are bristles in prescribed rows.

[Claim 3] An electric toothbrush as described in claim 1 that is characterized in that the bristles that move back and forth in the axial direction are interspersed among other bristles.

[Claim 4] An electric toothbrush as described in any of claims 1-3 that is characterized in that it has a drive means that imparts another motion to the bristles.

[Claim 5] An electric toothbrush as described in any of claims 1-4 that is characterized in that the bristles that move back and forth in the axial direction are divided into multiple groups that move back and forth with different phases.

## [Detailed Description of the Invention]

[0001]

[Field of technology to which the invention belongs] This invention concerns an electric toothbrush.

[0002]

[Prior art] There are various ways to brush with a toothbrush: the rolling technique, in which the toothbrush is half-rotated from the gums to the tips of the teeth as shown in Figure 22(a); the Bass technique, in which the toothbrush is moved in short strokes in the longitudinal direction of its handle, as shown in Figure 22(b); and the Fonz [phonetic spelling] technique, in which the toothbrush moves so as to describe continuous circles, as shown in Figure 22(c). With electric toothbrushes too, the bristles are driven so as to execute motions that imitate these brushing techniques.

[0003] In each of the above brushing techniques, the bristles are moved along the surface of the teeth, which is not very effective in removing plaque and tartar that adheres strongly to the surface of the teeth. In unexamined patent H2-142508 [1990], the bristles are moved back and forth in their axial direction. This type, in which the bristles are made to execute a motion perpendicular to the surface of the teeth, produces better results in removing foreign matter adhering to the surface of the teeth than does a type that moves the bristles along the surface of the teeth.

[0004]

[Problems that the invention is to solve] But with what is shown in the above patent, the bristles as a whole are made to move back and forth in their axial direction, so when the bristles are driven while the tips of the bristles are in contact with the surface of the teeth, a state in which the root ends of the bristles move back and forth arises more noticeably than the tips of the bristles moving back and forth, and because of this it has been difficult to make effective use of the motion of the bristles in brushing the teeth.

[0005] The purpose of this invention, which was devised with such points in mind, is to provide an electric toothbrush that can simply and surely remove the tartar, plaque, tobacco stains, and other matter that adheres to the surface of the teeth.

[0006]

[Means of solving the problems] But this invention has the feature that, in an electric toothbrush that has many bristles and a drive means that drives the bristles, the drive means causes only some of the bristles to move back and

forth in their axial direction. With other bristles that do not move back and forth in the axial direction, the bristles can be kept securely against the surface of the teeth, ensuring an operation of removing adhering matter by bristles that move back and forth in the axial direction.

[0007] Bristles in prescribed rows suffice as bristles that move back and forth in the axial direction, but when bristles that move back and forth in the axial direction are interspersed among other bristles, it becomes easier to maintain a state in which the bristles are in contact with the teeth. The bristles may be given a drive means that makes them perform other motions, combining the tooth-brushing effect of other motions.

[0008] Also, bristles that move back and forth in the axial direction can be divided into multiple groups that move back and forth with different phases. Because bristles that move back and forth in the axial direction come into contact with teeth and gums pointwise and coming into contact with them while changing the location, the gums are given a massage effect with a greater effect in removing adhering matter.

[0009]

[Embodiments of the invention] In Figure 1 through Figure 3, 1 is a holder that is connected to a main body that accommodates the motor and drive mechanism in an electric toothbrush, a drive shaft 15 is accommodated inside part of its handle 10, and a movable block 12 is accommodated inside part of bristle pad 11 at the tip. Part of the movable block 12 protrudes on the surface side of bristle pad 11 in the middle of the bristle pad 11 in the width direction, and among bristles 2 provided in three rows, the bristles 2 in the two side rows are embedded in the bristle pad 11, and the bristles 2 in the middle row are embedded in the movable block 12.

[0010] The drive shaft 15, which is connected to the drive mechanism when the holder 1 is coupled to the main body, rotates about the axis, or rotates back and forth about the axis, driven by the motor and drive mechanism, and provided at the tip of this drive shaft 15 is a cam 16 of elliptical cross-section. A groove of semicircular shape in which the cam 16 slides is formed as a cam follower on the rear side of said movable block 12. In addition, by an elastic body 17 made of a spring, elastomer, or the like arranged between the front side of the movable block 12 and the inner side of the bristle pad 11, the movable block 12 is biased rearward so that its cam follower part is put into contact with the cam 16, and thus when the cam 16 rotates, the movable block 12 makes back-and-forth motions out of and into the bristle pad 11. That is, when the drive shaft 15 is rotated, the central row of the bristles 2 among the three rows of bristles 2 that are provided makes back-and-forth motions in their axial direction.

[0011] If this toothbrush is used, as shown in Figure 4, the tooth 5 is brushed by causing the center row of bristles 2 to move back and forth in the axial direction with the tip of the bristles 2 kept against the surface of the tooth 5 from an oblique direction, but by putting the tips of the bristles 2 of the two side rows against the tooth 5, the toothbrush can be held in a stable state, thereby making it possible, by the axial-direction back-and-forth motion of the bristles 2 in the center row, to get bristles 2 into the space between the tooth 5 and the adhering matter 50 on the surface of the tooth 5, allowing removal of the adhering matter 50 to be done simply and surely. In this point, it is desirable that the tips of the bristles 2 that execute an axial back-and-forth motion be pointed, but when the tips of the bristles are rounded, their contact is

softened, having a gentle and massaging effect on the gums. Thus the bristles 2 that move back and forth in the axial direction should have a different type of tip depending on which effect is considered more important: removal of adhering matter, or the massaging effect. The bristles 2 that are made to move back and forth in the axial direction should, when they protrude, be about 3 mm farther outward than the other bristles 2.

[0012] Figure 5 shows the case in which the bristles 2 in the middle row are embedded in the bristle pad 11 of the holder 1 and the bristles 2 of the two side rows are provided in movable block 12. In Figure 6 and Figure 7, in the longitudinal direction of holder 1, bristles 2 embedded in movable block 12 are arranged between bristles 2 embedded in bristle pad 11. If bristles 2 that move back and forth in the axial direction are interspersed in this way among bristles 2 that do not move, one can more easily keep the tips of bristles 2 against the surface of the teeth, which makes it easier to achieve an operation of removing adhering matter by the bristles 2 that move back and forth in the axial direction.

[0013] In Figure 8 to Figure 10, the bristles 2 in the middle row of a toothbrush that performs motions for Bass tooth-brushing as a whole are further made to move back and forth in the axial direction. As a drive mechanism built into the main body, two eccentric cam parts 33 and 34 are provided on face gear 32, which receives the rotation of motor 30 via pinion 31, two connecting shafts 35 and 36 are provided that receive the motion of the two eccentric cam parts 33 and 34 and execute back-and-forth linear motion, and among the coupling shafts 35 and 36, which are arranged concentrically, the tip of the outer coupling shaft 35 is connected to the base end of the holder 1, and the tip of the inner connecting shaft 36 is connected via a joint 37 to drive shaft 15, as shown in Figure 8. Also, the drive shaft 15 shown here has on its tip a cam 16, which consists of a narrow shaft part, a tapering part, and a thick shaft part, and its back-and-forth motion in its axial direction causes movable block 12 to protrude from and recede into the surface of the bristle pad 11 of the holder 1.

[0014] The back-and-forth motion of connecting rod 35 causes the holder 1 as a whole to move back and forth and causes bristles 2 to execute motions for Bass tooth-brushing, and the back-and-forth motion of connecting rod 36 causes the two middle rows of bristles 2 embedded in the movable block 12 to further execute back-and-forth motion in the axial direction. Moreover, by making the axial-direction back-and-forth motion of connecting shaft 36 and the axial-direction back-and-forth motion of connecting shaft 35 of opposite phase, the stroke of drive shaft 15 with respect to the holder 1 can be made larger than the stroke of the back-and-forth motion of connecting shaft 36, and the movement of the middle rows of bristles 2 can be executed surely.

[0015] In Figure 11 to Figure 14, the bristles 2 in the middle rows of a toothbrush that performs the motions for rolling tooth-brushing as a whole are further made to execute back-and-forth motion in the axial direction, and in a drive mechanism (not pictured) on the side of the main body 3, something is used that simultaneously imposes on the connecting shaft 35 reciprocating back-and-forth motion in the axial direction and oscillating back-and-forth motion about the axis. Moreover, such drive mechanisms are already publicly known, so they will not be described here.

[0016] On the other hand, in the holder 1 something is used in which the bristle pad 11 is connected rotatably to the handle 10, which is fixed to the main body 3; a pin 19

provided on drive shaft 15 is made to engage with a slot 14 provided on the bristle pad 11; the rotary movement about the axis in drive shaft 15, which is connected to the connecting shaft 35 via a joint 39, is transmitted via the pin 19 to the bristle pad 11; and the bristle pad 11 is caused to execute back-and-forth rotary movements for rolling tooth-brushing. Also, the same kind of cam 16 as in the previous example is provided on the tip of drive shaft 15, and the two middle rows of bristles 2 that are embedded in the moving block 12 are further made to perform back-and-forth motion in the axial direction by the axial-direction back-and-forth motion of drive shaft 15.

[0017] In Figure 15 to Figure 18, as a whole, bristles 2 that rotate about the axis and bristles 2 that move back and forth in the axial direction are combined together; a bevel gear 18 and cam 16 are provided on the tip of drive shaft 15, which rotates about its axis; the bevel gear 18 meshes with a bevel gear 21, which is provided on a rotation pad 13, which is provided on the bristle pad 11; and thereby the rotation pad 13, in which bristles 2 are embedded, is made to rotate about its axis. Also, bristles 2 embedded in the movable block 12, which engages with the cam 16, are arranged in the middle of bristles 2 embedded in the rotation pad 13. Most of the bristles 2 are rotated by the rotation of the rotation pad 13, and only the bristles 2 that are located in the center make a back-and-forth motion in the axial direction.

[0018] Still more examples are shown in Figure 19 to Figure 21. Here, three types of cams 16a, 16b, and 16c of different eccentric directions are provided on drive shaft 15, which rotates about its axis; three types of movable blocks 12a, 12b, and 12c are provided corresponding to cams 16a, 16b, and 16c respectively; and bristles 2 embedded in these movable blocks 12a, 12b, and 12c move back and forth in the axial direction with different phases.

[0019]

[Effects of the invention] As described above, in this invention only some of the bristles move back and forth in their axial direction, and because other bristles that do not move back and forth in the axial direction allow a state to be securely maintained in which bristles are in contact with the surface of the teeth, that is, because the bristles that move back and forth in the axial direction make it possible to securely maintain a state in which their tips move back and forth, the bristles that move back and forth in the axial direction make it possible to surely and easily obtain an action that removes the adhering matter.

[0020] The bristles that move back and forth in the axial direction may be bristles in prescribed rows, but if the bristles that move back and forth in the axial direction are interspersed among other bristles, it becomes easier to maintain a state in which the bristles remain in contact with the teeth, and it becomes easier to remove adhering matter with the bristles that move back and forth in the axial direction. There may also be a drive means that causes the brushes to carry out other motions. This makes it possible to also have a tooth-brushing effect by the other motions.

[0021] And if the bristles that move back and forth in the axial direction are divided into multiple groups that move back and forth in different phases, bristles that move back and forth in the axial direction come into contact with teeth and gums pointwise and come into contact with them while changing the location, which can provide a very desirable massage effect for the gums, with a greater effect in removing adhering matter.

## [Brief Explanation of the Drawing]

[Figure 1] This shows the operation of an example of an embodiment of this invention; (a) and (b) are both cross-sectional views.

[Figure 2] This is an exploded perspective view of the above.

[Figure 3] Here, (a) is a front view of the above, (b) is a side view of the above, and (c) is a longitudinal sectional view of the above.

[Figure 4] This is an explanatory diagram showing the action when the above tooth-brushing is done.

[Figure 5] This shows the operation in another example; (a) and (b) are both cross-sectional views.

[Figure 6] This shows the operation in still another example; (a) and (b) are both longitudinal sectional views.

[Figure 7] Here, (a) and (b) are cross-sectional views of the above.

[Figure 8] This shows another example; (a) is a partial front view, and (b) is a longitudinal sectional view.

[Figure 9] This is a sectional view showing the drive mechanism of the above.

[Figure 10] This shows the operation of the above; (a) and (b) are both cross-sectional views.

[Figure 11] This is a front view of still another example.

[Figure 12] This is a longitudinal sectional view of the above.

[Figure 13] This is a perspective view of the connecting shaft of the above.

[Figure 14] This shows the operation of the above; (a) and (b) are both cross-sectional views.

[Figure 15] This is a perspective view of a different example.

[Figure 16] This is a front view of the above.

[Figure 17] This is a longitudinal sectional view of the above.

[Figure 18] This shows the operation of the above; (a) and (b) are both cross-sectional views.

[Figure 19] This is a perspective view of still another example.

[Figure 20] Here, (a) is a vertical sectional view of the above, and (b) is a cross-sectional view of the above.

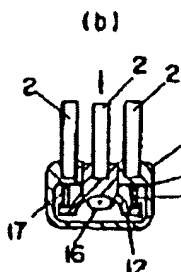
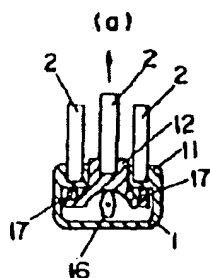
[Figure 21] This is a perspective view of the above cams.

[Figure 22] Here, (a), (b), and (c) are explanatory diagrams of brushing techniques.

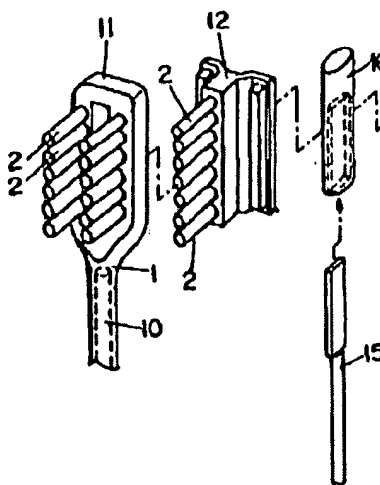
## [Explanation of the symbols]

- 1 holder
- 2 bristles
- 12 movable block
- 15 drive shaft
- 16 cam

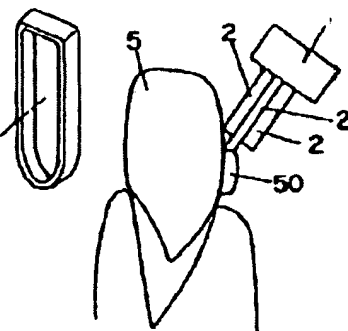
[Figure 1]



[Figure 2]



[Figure 4]

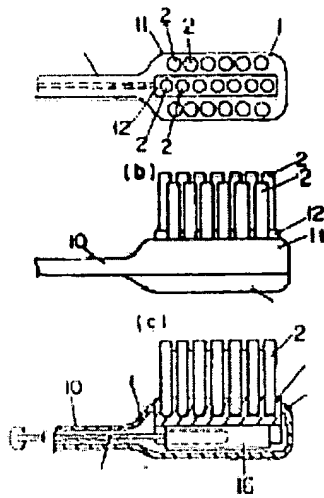


- 1 ホルダー
- 2 ブラシ
- 12 可動ブロック
- 15 駆動軸
- 16 カム

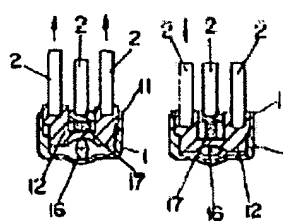
[Figure 1]

- 1 holder
- 2 bristles
- 12 movable block
- 15 drive shaft
- 16 cam

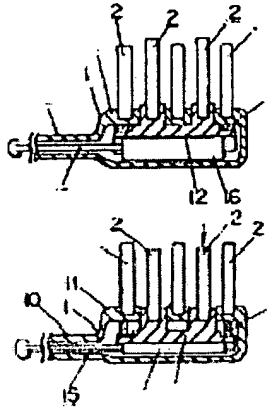
[Figure 3]



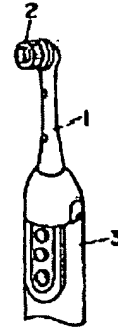
[Figure 5]



[Figure 6]



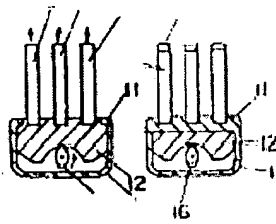
[Figure 15]



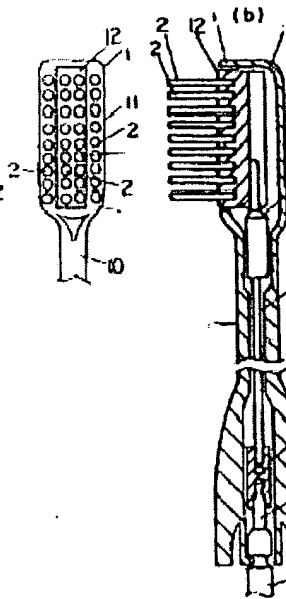
[Figure 9]

[Figure 11]

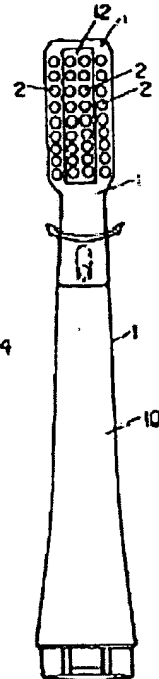
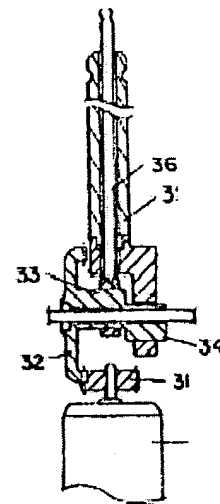
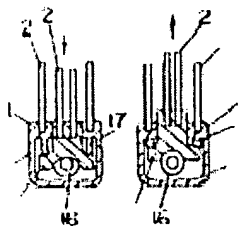
[Figure 7]



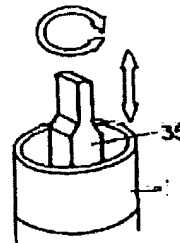
[Figure 8]



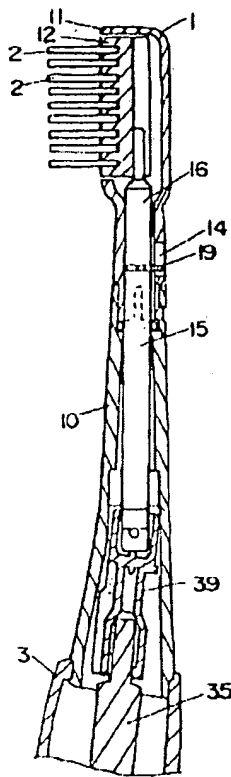
[Figure 10]



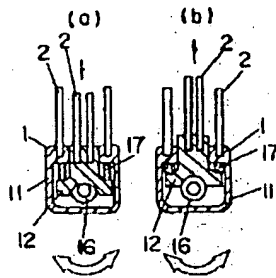
[Figure 13]



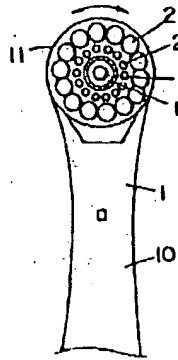
[Figure 12]



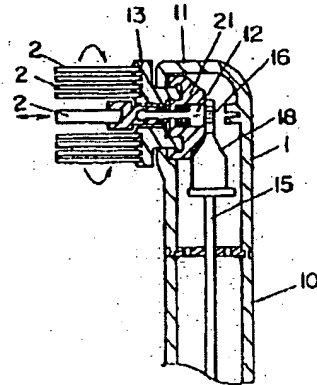
[Figure 14]



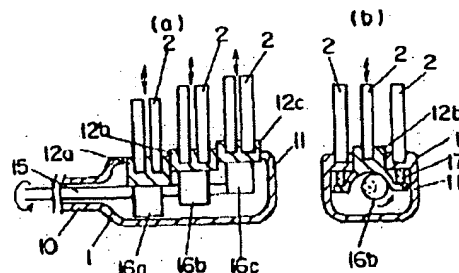
[Figure 16]



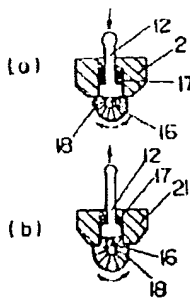
[Figure 17]



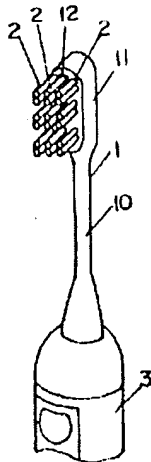
[Figure 20]



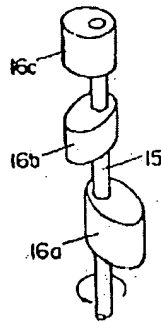
[Figure 18]



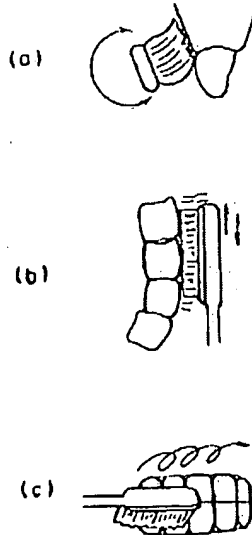
[Figure 19]



[Figure 21]



[Figure 22]







IPW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Depuydt et al )  
Application No. 10/697,206 ) Examiner: G. Graham  
Filed: October 30, 2003 ) Group Art Unit 1744  
For: Brush Head For Toothbrush ) Confirm No. 2209

Commissioner For Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

SUBMISSION OF REPLACEMENT DRAWING

Pursuant to 37 C.F.R. §1.85, applicants submit herewith a Replacement Sheet 8/8 for this application.

In the Replacement Sheet, Figs. 13 and 14 are amended to include reference numerals 140, 142 and 144 to indicate features shown in the drawings as originally filed. Applicants believe that no new matter is included in the Replacement Sheet.

The Examiner's approval of the drawing is requested.

Respectfully submitted,

*Charles P. Boukus, Jr.*

Charles P. Boukus, Jr.  
Registration No. 24,754  
Attorney for Applicants  
Suite 202  
2001 Jefferson Davis Highway  
Arlington, Virginia 22202  
(703) 415-2620

January 13, 2006